

bed does between two strata of marl, it arouses considerable interest as to the method of its formation and also that of the bed of marl above and below the moss. Professor Berry says of this species "this moss is very common and wide-spread in middle latitudes and may possibly be a composite form. It grows in various moist (not necessarily swamp) situations from the Atlantic to the Pacific."

The deposits are all post-glacial and probably represent fluctuations in a water body, possibly connected with the Fox River Valley. The thickness of the moss (two feet) suggests a comparatively long period of swampy condition between two pond formations. The mollusks are indicative of a water body four to eight feet in depth. Samples were not secured of the marl beneath the moss, which probably also contained mollusks.

The whole Fox River Valley is worthy of study, the lower part of the river bank bearing strata belonging to the Sangamon or Post-Illinoian interglacial interval, which are fossil-bearing. In view of the rich beds of molluscan fossils found near Chicago, it would seem that these Fox River strata should be investigated, as they may also contain remains of life indicating something of the migration of life during this interesting interval, when the great shell beds of Toronto were formed.

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THE GASTROPODA OF PAYNE COUNTY, OKLAHOMA.

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The collection upon which the list of species given below is based was made in the month of May, during a season of abnormally wet weather. While we covered practically the whole of Payne county, the region between Wild Horse and Stillwater creeks and from the Cimarron River north to the town of Stillwater was studied quite thoroughly during the period of our stay.

Of the nine families represented in the region, the *Helicidae*

and *Pupillidæ* are the most prolific of the land forms. The *Pupillidæ* represented by five species, are by far the most abundant of the land forms, *Bifidaria procera* and *cristata* occurring in colonies of hundreds. *Bifidaria contracta* Say, however is quite rare, being known only from a few specimens taken from the stomach of a lizard.

Among the specimens of the *Zonitidæ*, *Vitrea indentata* Say and *Zonitoides aborea* Say are very plentiful in suitable spots, while *Euconulus fulvus* Drap. is rare, although the latter is adapted to like environment in other regions. *Succinea avara* Say is very abundant along the margins of small streams and ponds where the soil is damp and well shaded.

Following each species we have given measurements of the average sized, mature shells from the various stations in which we collected in the county. These measurements may be accepted as representing the size acquired by each species in this particular region of Oklahoma.

Helicidæ.

- Polygyra monodon* Rack. Alt. 5.2 mm., diam. 8.5 mm.
Polygyra texasiana Moric. Alt. 4.3 mm., diam. 9.3 mm.
Polygyra texasiana var. Alt. 5.2 mm., diam. 11.7 mm.

Pupillidæ.

- Bifidaria armifera* Say. Alt. 4.6 mm., diam. 2.8 mm.
Bifidaria contracta Say. Alt. 2.6 mm., diam. 1.4 mm.
Bifidaria procera Gld.
Bifidaria p. cristata P. & V. Alt. 2.8 mm., diam. 1.2 mm.
Pupoides marginatus Say. Alt. 4.8 mm., diam. 2.0 mm.
Strobilops labyrinthica Say. Alt. 2.2 mm., diam. 2.4 mm.
Vertigo ovata Say.

Zonitidæ.

- Euconulus fulvus* Drap. Alt. 2.9 mm., diam. 2.8 mm.
Vitrea indentata Say. Alt. 2.1 mm., diam. 6.0 mm.
Zonitoides arborea Say. Alt. 1.9 mm., diam. 4.5 mm.
Zonitoides minuscula Binn. Alt. 0.9 mm., diam. 2.1 mm.

Limacidæ.

- Agriolimax agrestis* Linn.

Endodontidæ.

Helicodiscus parallelus Say. Alt. 1.4 mm., diam. 4.7 mm.

Succinidæ.

Succinea avara Say. Alt. 12.1 mm., diam. 6.4 mm.

Succinea grosvenor Lea.

Limnæidæ.

Lymnæa cubensis Pfr. Alt. 11.8 mm., diam 6.6 mm.

Planorbis antrosus Conr. (*bicarinatus* Say). Alt. 4.9 mm., diam. 9.9 mm.

Planorbis parvus Say. Alt. 1.0 mm., diam. 4.0 mm.

Planorbis trivolvis Say. Alt. 7.3 mm., diam. 19.5 mm.

Physidæ.

Physa gyrina Say. Alt. 14.7 mm. diam. 7.6 mm.

Amnicolidæ.

Amnicola cincinnatiensis Anth. Alt. 4.7 mm., diam. 3.2 mm.

In this connection it may be mentioned that while gastropods are abundant in the ponds, small creeks and the larger streams tributary to the Cimarron, not a single form of molluscan life was found in the Cimarron River, in Payne county, although the dredge was used at frequent intervals along a stretch of fifteen miles.

MOLLUSCA OF SOUTH DAKOTA.

BY W. H. OVER.

(Concluded from page 81).

All species listed were collected by me and are in my private collection of land and freshwater Mollusca now on exhibition in the Museum of the University of South Dakota.

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Vallonia costata Müll. Deuel Co.

Vallonia pulchella Müll. Deuel Co.